Improved Results Reflect Device Evolution and Refined Patient Selection

Rami O. Tadros, Peter L. Faries, Sharif H. Ellozy, Rachel Schrier, Sung yup Kim, Rajesh Malik, Ageliki G. Vouyouka, Robert A. Lookstein, Michael L. Marin. Vascular Surgery, The Mount Sinai Medical Center, New York, NY

Objectives: There have been three eras in the development of EVAR: physician-made and early industry devices, intermediary commercial endografts, and modern stentgrafts. This study analyzed the differences in outcomes between these three groups.

Methods: From 1992-2012, 1290 patients underwent elective EVAR. Fifteen different devices were used during this time. The three eras were defined as: Era1: 1992-96; Era2: 1997-2006; Era3: 2007-2012. Grafts used in each era were: Era1: physician-made and EVT; Era2: Talent, Aneurx, Excluder, Quantum LP, Zenith, Vangaurd, PG AAA, Ancure, Endologix, and Teramed; Era3: Talent, Aneurx, Endurant, Excluder, Zenith, and Aptus.

Results: Mean age was 75.2 years and 85% were men. First generation patients were higher surgical risk (Mean Glasgow Aneurysm Scores: Era1 84.81 vs Era3: 79.95, $P = .048$). Adjunctive procedures increased from Era1 to Era3 ($P = .014$). Procedure times ($P < .001$), Blood loss ($P = .01$), and Length of stay ($P < .001$) have declined overtime. Major peri-operative complications (Era1: 23%, Era2: 9.2%, and Era3: 4.5%; $P < .001$) and AAA-related peri-operative mortality (Era1: 17.6%, Era2: 2.3%, and Era3: 0.0%; $P < .001$) have decreased. Type 1 and 3 endoleaks ($P = .011$) and the need for reintervention ($P < .001$) have diminished. Median survival for all causes of death and freedom from aneurysm-related mortality significantly improved (Fig).

Conclusions: EVAR has evolved over the last 20 years resulting in an overall improvement in efficiency, outcomes and procedural success.

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PS36.

Significant Predictors of Open Surgical Conversion Following Failed Percutaneous Approach for Endovascular Aortic Aneurysm Repair

Albeir Mousa, Michael Parmely, Mike Broce, Shadi Abu Halimah, Patrick Stone, Stephen Hass, Aravinda Nanjundappa, John Campbell, Mark Bates, Ali AbuRahma. Vascular & Endovascular Surgery Division, University of West Virginia, Charleston, WV

Objectives: To determine predictors of conversion from percutaneous (PEVAR) to an open approach (OEVAR) during groin access of endovascular aortic aneurysm repair (EVAR).

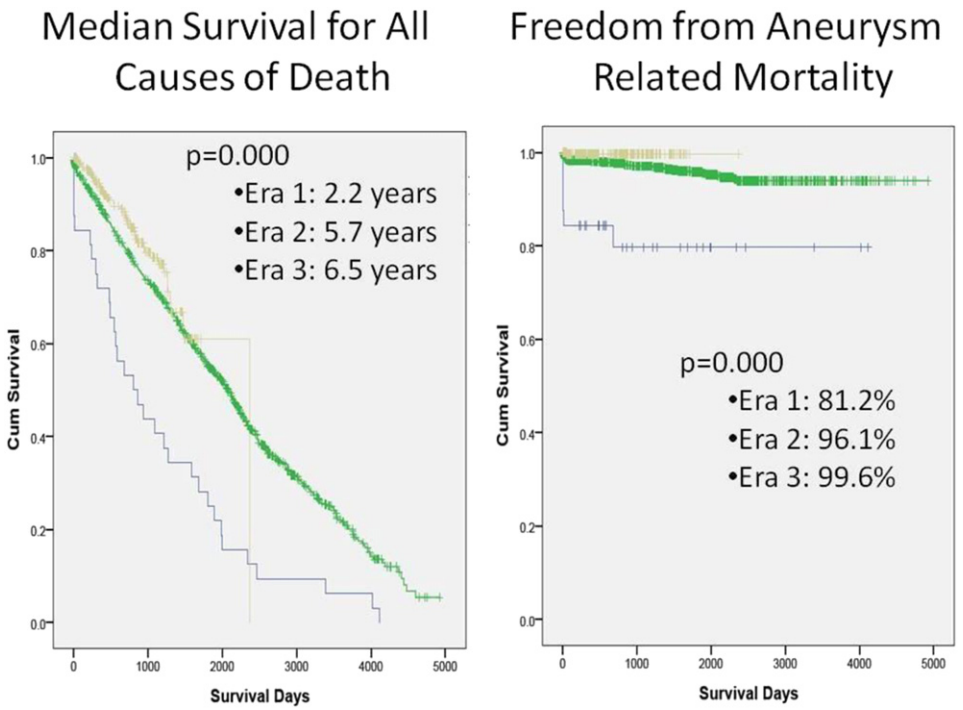

Fig.

Methods: A retrospective review of all EVAR patients from January 2009 through June 2011. Target vessels were classified as mild (<1/3), moderate (1/3 to ½) or severe (>½) according to circumference of calcification.

Results: We investigated 400 access sites for 200 patients who underwent EVAR. Averages were age 72.8 + 9.0, vessel size 9.6 + 1.8, sheath size 17.1 + 3.0, BMI 27.6 + 5.3, and eGFR 68.5 + 24.2%. Co-morbidities included dyslipidemia (64.5%), and hypertension (42.0%). There were 132 OEVAR (66 patients), 2 mixed (OEVAR and PEVAR for 1 patient) and 266 (133 patients) PEVAR approaches. Use of PEVAR increased over time [45.5% (2009), 77.8% (2010) and up to 88.5% (2011); P = .001] while conversion decreased [24.3% (2009), 8.7% (2010) and 4.3% (2011); P = .001]. Length of stay was significantly shorter for PEVAR (3.0 + 4.6 vs 6.1 + 9.1 days; P = .013). For the 266 PEVAR approaches, 32 (32/266 = 12.0%) had to be converted. After multivariate analysis, it was found that severely calcified arteries were most predictive of conversion (odds ratio (OR), 36.4; P < .001). Year of procedure (2010; OR, 0.17; P = .001), (2011; OR, 0.20; P = .049), female gender (OR, 3.1; P = .017), moderately calcified arteries (OR, 2.5; P = .085) and age (OR, 2.3 (per decade); P = .002) were all also significant. Vessel and sheath size along with BMI were non-significant.

Conclusions: PEVAR was found to be safe, reliable and feasible. Several factors including vessel calcification, age and female gender should be considered before PEVAR intervention.

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C6c: Poster Session-Cerebrovascular Including Great Vessels

PS38.

High Risk Anatomic Variables and Plaque Characteristics in Carotid Artery Stenting

Courtney M. Daly, Cheong J. Lee, Melina Kibbe, Jason Chin, Mark Morasch, Heron Rodriguez, Mark K. Eskandari, Irene B. Helenowski. Vascular Surgery, Northwestern Memorial Hospital, Chicago, Ill

Objectives: To determine anatomic and plaque-related risk factors for patients undergoing carotid artery stenting.

Methods: A retrospective review of patients in a prospectively maintained database undergoing carotid artery stenting at our institution between 2001-10 was performed. Preoperative imaging studies (ie, ultrasound, CTA, MRA, and angiograms) were reviewed for specific anatomic criteria and plaque characteristics. Primary outcomes included perioperative neurologic events (30-day CVA or TIA), 30-day mortality, CVA, and MI. Secondary outcome included stent restenosis.

Results: Imaging was reviewed for 408 carotid arteries in 382 patients. There were 15 perioperative neurologic events (3.6%), with eight TIA, five CVA, and two seizures. 30-day mortality, CVA, and MI was 0.5%, 2.0%, and 0.7%, respectively. Surprisingly, we found that arch type (I = 32%; II = 60%; III = 7%), ostial involvement (12%), tandem lesions (20%), and plaque calcification (78%) did not correlate with perioperative neurologic events. Arch calcification was more common in female vs male patients (mild, 53.1% vs 66.5%; moderate, 32.3% vs 26.5%; severe, 14.6% vs 7.1%; P = .05), but did not correlate with perioperative events. CCA tortuosity was more common in octogenarians (80% vs 27.5%; P = .02), but did not correlate with perioperative events. Ipsilateral ECA stenosis >50% did correlate with perioperative neurologic events (8.2% vs 2.3%; P = .04). Plaque ulceration was present in 55% of patients, and trended towards an increase in neurologic events (P = .07). In terms of secondary criteria, a lower ICA to CCA angulation was associated with restenosis (P = .03), and more steeply angulated arch types trended towards an increase in restenosis (I = 1.1%; II = 2.5%; III = 10.5%; P = .09).

Conclusions: Our data suggest that ipsilateral ECA stenosis and plaque ulceration may be associated with increased perioperative neurologic risk during carotid stenting, but surprisingly, arch type and calcification are not.

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PS40.

Risk of Cranial Nerve Palsy Following Carotid Endarterectomy

Margriet Fokkema[1], Gert Jan de Borst[2], Brian Nolan[3], Jeffrey E. Indes[4], Ruby C. Lo[1], Thomas Curran[1], Dominique B. Buck[1], Frans L. Moll[2], Marc L. Schermerhorn[1]. [1]Surgery, Beth Israel Deaconess Medical Center, Boston, Mass; [2]University Medical Center Utrecht, Utrecht, The Netherlands; [3]Dartmouth-Hitchcock Medical Center, Lebanon, NH; [4]Yale University School of Medicine, New Haven, Conn

Objectives: To evaluate transient and persistent cranial nerve palsy (CNP) after carotid endarterectomy (CEA), the nerves affected and predictors for CNP.

Methods: All CEA patients in the Vascular Study Group of New England were identified between 2003-2011. Primary endpoints were CNP at discharge and persistent CNP at follow-up (median 1 year). Hierarchical multivariable model controlling for surgeon and hospital was used to assess independent predictors.

Results: 6878 patients (33.8% symptomatic) were included for analyses. 1.3% of patients had prior cervical radiation and 2.2% of patients underwent redo-CEA. CNP rate at discharge was 5.6% (n = 382). Sixty patients (0.7%) had more than 1 branch affected. The hypoglossal nerve (XII) was most frequently involved (n = 185,